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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,308	09/09/2004	Phillip Kent Niccum	04-10	5307

32583 7590 12/28/2007

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EXAMINER	
BOYER, RANDY	
ART UNIT	**PAPER NUMBER**
1797	
MAIL DATE	**DELIVERY MODE**
12/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,308	NICCUM ET AL.	
	Examiner	Art Unit	
	Randy Boyer	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-6 and 21-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-6 and 21-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *13 November 2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 October 2007 has been entered.

Response to Amendment

2. Examiner acknowledges Applicant's response filed 17 October 2007 containing amendments to the claims, remarks, and drawing replacement sheet. Examiner further acknowledges Information Disclosure Statement filed 13 November 2007.

3. Claims 1, 4-6, and 21-33 are pending.

4. Examiner acknowledges that Applicant's amendments to claims 4-6 and 29 are sufficient to overcome the previous objections.

5. The previous rejections of claims 25, 28, 29, and 33 under 35 U.S.C. 102(b) are maintained. Likewise, the previous rejections of claims 1, 4-6, 21-24, 26, 27, and 30-32 under 35 U.S.C. 103(a) are maintained. The rejections follow.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 25, 28, 29, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Parker (US 4692311).

8. With respect to claim 25, Parker discloses an apparatus for separating particulates from a carrier fluid (see Parker, Fig. 2), comprising: (a) an upper section (24) with a first cross-sectional area; (b) a lower section (27, 35) with a second cross-sectional area; (c) a conical member (25, 26) disposed within the lower section (27, 35) and mounted coaxially along a longitudinal centerline of the lower section (27, 35) thereby forming one or more passages therebetween; (d) a tangential inlet (31) adapted to feed a particulate-fluid suspension to the upper section (24) wherein at least a portion of the upper section (24) has a cylindrical surface to separate a major fraction of the particulates from the suspension and from a vortex of reduced particulate content; and wherein the lower section (27, 35) comprises a lower surface having a plurality of apertures formed therethrough (see Parker, column 6, lines 1-26).

9. With respect to claim 28, Parker discloses wherein the conical member (25, 26) comprises an apex (25) disposed toward the upper section (24) and a base (26) defining one or more passages with an inner wall of the lower section (27, 35).

10. With respect to claim 29, Parker discloses a method for stripping particulates from a particulate-fluid suspension comprising (see Parker, column 1, lines 10-19): (a) introducing a particulate-fluid suspension to a vessel (17) comprising (i) an upper section (24) with a first cross-sectional area, (ii) a lower section (27, 35) with a second cross-sectional area, (iii) a conical member (25, 26) disposed within the lower section (27, 35) and mounted coaxially along a longitudinal centerline of the lower section (27, 35) thereby forming one or more passages therebetween, (iv) a tangential inlet (31) to feed a particulate-fluid suspension to the upper section (24) wherein at least a portion of the upper section (24) has a cylindrical surface to separate a major fraction of the particulates from the suspension and form a vortex of reduced particulate content, wherein the lower section (27, 35) comprises a lower surface having a plurality of apertures formed therethrough (see Parker, Fig. 2; and column 6, lines 18-26); (b) separating particulates from the particulate-fluid suspension using the cylindrical surface within the upper section (24) thereby forming a vortex of reduced particulate content; (c) settling the separated particulates into the lower section (27, 35); and (d) introducing a fluid through the plurality of apertures in the lower surface of the lower section (27, 35) (see Parker, Fig. 2; and column 6, lines 1-26).

11. With respect to claim 33, Parker discloses wherein the particulate-fluid suspension is a fluidized catalytic cracker riser stream containing hydrocarbon gas and particulates (see Parker, Abstract; and column 1, lines 10-19).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 1, 5, 6, 21-24, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker (US 4692311). Alternatively, claims 1, 5, 6, 21-24, 26, and 27 are rejected under 35 U.S.C. 103(a) over Parker (US 4692311) in view of Simpson (US 7108138) and as further evidenced by Dewitz (US 5869008) or Ko (N.W.M. Ko & A.S.K. Chan, *In the Intermixing Region Behind Circular Cylinders With Stepwise Change of the Diameter*, 9 EXPERIMENTS IN FLUIDS 213-221(1990)) or Mori (US 6041754) or Wasif (US 2005/0016178) or Hwang (US 2005/0183664).

16. With respect to claim 1, Parker discloses a particulate stripping unit (Fig. 2) for separating particles in suspension with a carrier fluid with a self-stripping disengagement feature, comprising: (a) a vessel (17) having a cyclone section (24) and a stripping section (27); (b) an inlet (31) to tangentially feed a particulate-fluid suspension to the cyclone section (24); (c) a cylindrical surface within the cyclone section (24) to separate a major fraction of the particulates from the suspension and form a central fluid vortex of reduced particulate content; (d) a particulate discharge outlet (39) from the cyclone section (24) to the stripping section (27); (e) a plurality of apertures disposed through a lower portion of the stripping section (see Parker, Fig. 2; and column 6, lines 22-24); and (f) a discharge line (20) from the cyclone section (24) in communication with the vortex.

Parker does not disclose wherein the particulate stripping unit comprises a

stripping section having a cross sectional area less than a cross sectional area of the cyclone section.

However, it is known to those in the art that changes in diameter of a conduit through which fluid flows will induce a vortex to form therein.[1] For example, Simpson discloses a material classifier device that uses an internal cyclone to separate coarse particles from fine particles (see Simpson, Abstract). Simpson instructs that "in order to enhance and aid the interior vortex development, one needs to introduce diffuser air at a cylinder diameter larger than the cyclone outlet diameter" (see Simpson, column 6, lines 12-24). Examiner further notes that Simpson discloses wherein his cyclone material classifier uses "a plurality of openings disposed through a lower portion of the stripping section" (see Simpson, column 6, lines 12-24) which he again cites as important to aid in the formation and sustainability of the interior vortex.

Therefore, the person having ordinary skill in the art of particulate stripping units would have been motivated to modify the unit of Parker by increasing the cross sectional area of the cyclone section relative to the stripping section (as is known in the art and further evidenced by Simpson) in order to ensure rapid development and

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1 See generally, N.W.M. Ko & A.S.K. Chan, *In the Intermixing Region Behind Circular Cylinders With Stepwise Change of the Diameter*, 9 EXPERIMENTS IN FLUIDS 213-221(1990). See also Mori (US 6,041,754) (column 1, lines 39-43) ("Similarly, if there is a step difference where the passageway diameter expands in the direction of advance of intake air in the idle intake passageway [ ] downstream of the idle intake regulation valve [ ], a vortex is generated downstream of the step."); Wasif (US 2005/0016178) (page 2, paragraph 23) ("The flat geometry of the burner insert assembly [ ] provides an abrupt diameter change from the outlet end of the main burner [ ] to the combustion chamber [ ], which causes a flow vortex [ ] just downstream of the burner insert assembly [ ] within the combustion chamber."); and Hwang (US 2005/0183664) (page 1, paragraph 12) ("The vortex of the process gas G is generated due to the above-mentioned abrupt diameter difference.").

sustained strength of an interior vortex necessary to separate particulates from the carrier fluid.

Finally, the person having ordinary skill in the art of particulate stripping units would have had a reasonable expectation of success in modifying the unit of Parker as taught by Simpson because: (1) both Parker and Simpson are concerned with the cyclonic removal of particulate matter from a carrier fluid; and (2) Parker's unit is not specifically limited to the embodiment shown in his Fig. 2.

17. With respect to claim 5, Parker discloses wherein the particulate stripping unit (17) further comprises a stabilizer (26) disposed between the vortex (in the cyclone zone (24)) and the stripping section (27), the stabilizer (26) comprising an annular passage disposed therethrough.

18. With respect to claim 6, Parker discloses wherein the particulate stripping unit inlet (31) is connected to a riser reactor (see Parker, column 1, lines 14-19; and column 2, lines 44-49).

19. With respect to claim 21, Parker discloses a method for stripping vapor from a suspension in a carrier gas, comprising: (a) separating particulates from the suspension in a separation zone having a first-cross-sectional area to form a particulate-rich stream with entrained vapor and a vapor stream lean in suspended matter; (b) introducing a stripping fluid through a plurality of apertures formed through a lower exterior wall of a stripping zone below the initial separation zone; (c) passing the particulate-rich stream from the separation zone through the stripping zone, making countercurrent contact with the stripping fluid to remove at least a portion of the

entrained vapor, and into a dipleg in communication with the stripping zone; and (d) recovering stripped particulates from the dipleg (see Parker, Fig. 2; column 2, lines 35-68; and column 3, lines 1-10).

Parker does not disclose wherein the stripping zone has a second cross-sectional area less than the first cross-sectional area of the separation zone.

However, it is known to those in the art that changes in diameter of a conduit through which fluid flows will induce a vortex to form therein. For example, Simpson discloses a material classifier device which uses an internal cyclone to separate coarse particles from fine particles (see Simpson, Abstract). Simpson instructs that "in order to enhance and aid the interior vortex development, one needs to introduce diffuser air at a cylinder diameter larger than the cyclone outlet diameter" (see Simpson, column 6, lines 12-24). Examiner further notes that Simpson discloses wherein his cyclone material classifier uses "a plurality of openings disposed through a lower portion of the stripping section" (see Simpson, column 6, lines 12-24) which he again cites as important to aid in the formation and sustainability of the interior vortex.

Therefore, the person having ordinary skill in the art of particulate stripping units would have been motivated to modify the unit of Parker by increasing the cross sectional area of the cyclone section relative to the stripping section (as is known in the art and further evidenced by Simpson) in order to ensure rapid development and sustained strength of an interior vortex necessary to separate particulates from the carrier fluid.

Finally, the person having ordinary skill in the art of particulate stripping units would have had a reasonable expectation of success in modifying the unit of Parker as taught by Simpson because: (1) both Parker and Simpson are concerned with the cyclonic removal of particulate matter from a carrier fluid; and (2) Parker's unit is not specifically limited to the embodiment shown in his Fig. 2.

20. With respect to claim 22, Parker discloses wherein the stripping zone is in fluid communication with the initial separation zone via an annular passage defined by an outside diameter of a stabilizer (26) and an interior wall of the stripping zone (27) (see Parker, Fig. 2 and accompanying text).

21. With respect to claims 23 and 24, Parker discloses a cyclone having a stripping zone (27) in communication with the upper portion (cyclone zone (24)), wherein the cyclone bottom includes a dipleg (23) to receive the solids rich stream from the stripping zone and a plurality of openings (see Parker, Fig. 2) in the wall of the cyclone bottom to introduce stripping fluid into the stripping zone; and wherein the new cyclone bottom comprises a vortex stabilizer (26) and an interior wall of the cyclone bottom that defines an annular passage (39) there between.

Parker does not disclose wherein such cyclone apparatus is made by retrofitting an existing cyclone.

However, Parker specifically notes the advantages provided by his cyclone design. He explains that prior attempts to introduce stripping gas directly into a cyclone separator resulted in a loss of separation efficiency, and thus was impractical (see Parker, column 2, lines 22-24). This problem was overcome by Parker's design through

the addition of the vortex stabilizing means (26). Thus, the vortex stabilizer (26) allows for the *unitary* design of Parker's cyclone separator/stripper, providing (1) quick stripping time to remove bulk product vapor and interstitial vapor, and (2) longer stripping time required to desorb hydrocarbon products from the catalyst (see Parker, column 2, lines 14-35). Examiner finds that following the steps of Applicant's "method of retrofitting an existing cyclone to a self-stripping cyclone" as defined by claims 23 and 24 would result in the unitary design of Parker's cyclone separator/stripper as modified in view of Simpson (see discussion *supra* at paragraph 16). Moreover, it is generally known in the art to retrofit existing cyclones, e.g. in order to make use of existing process equipment and to save on new equipment costs (see e.g., Dewitz (US 5869008) at column 9, lines 19-46).

Therefore, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to retrofit an existing cyclone to a self-stripping cyclone of the type disclosed by Parker by installing a new cyclone bottom to an upper portion of the existing cyclone in order to provide a stripping zone in communication with the upper portion, wherein the cyclone bottom includes a dipleg to receive the solids rich stream from the stripping zone and a plurality of openings in the wall of the cyclone bottom to introduce stripping fluid into the stripping zone; and wherein the new cyclone bottom comprises a vortex stabilizer and an interior wall of the cyclone bottom that defines an annular passage there between.

22. With respect to claim 26, Parker discloses an apparatus for separating particulates from a carrier fluid (see Parker, Fig. 2), comprising: (a) an upper section

(24) with a first cross-sectional area; (b) a lower section (27, 35) with a second cross-sectional area; (c) a conical member (25, 26) disposed within the lower section (27, 35) and mounted coaxially along a longitudinal centerline of the lower section (27, 35) thereby forming one or more passages therebetween; (d) a tangential inlet (31) adapted to feed a particulate-fluid suspension to the upper section (24) wherein at least a portion of the upper section (24) has a cylindrical surface to separate a major fraction of the particulates from the suspension and from a vortex of reduced particulate content; and wherein the lower section (27, 35) comprises a lower surface having a plurality of apertures formed therethrough (see Parker, column 6, lines 1-26).

Parker does not disclose wherein the first cross-sectional area is greater than the second cross-sectional area.

However, it is known to those in the art that changes in diameter of a conduit through which fluid flows will induce a vortex to form therein. For example, Simpson discloses a material classifier device that uses an internal cyclone to separate coarse particles from fine particles (see Simpson, Abstract). Simpson instructs that "in order to enhance and aid the interior vortex development, one needs to introduce diffuser air at a cylinder diameter larger than the cyclone outlet diameter" (see Simpson, column 6, lines 12-24). Examiner further notes that Simpson discloses wherein his cyclone material classifier uses "a plurality of openings disposed through a lower portion of the stripping section" (see Simpson, column 6, lines 12-24) which he again cites as important to aid in the formation and sustainability of the interior vortex.

Therefore, the person having ordinary skill in the art of particulate stripping units would have been motivated to modify the unit of Parker by increasing the cross sectional area of the cyclone section relative to the stripping section (as is known in the art and further evidenced by Simpson) in order to ensure rapid development and sustained strength of an interior vortex necessary to separate particulates from the carrier fluid.

Finally, the person having ordinary skill in the art of particulate stripping units would have had a reasonable expectation of success in modifying the unit of Parker as taught by Simpson because: (1) both Parker and Simpson are concerned with the cyclonic removal of particulate matter from a carrier fluid; and (2) Parker's unit is not specifically limited to the embodiment shown in his Fig. 2.

23. With respect to claim 27, the person having ordinary skill in the art would recognize that the apparatus of Parker as modified to incorporate a change in diameter would *necessarily* have a tapered transition section disposed between the upper section and the lower section. Moreover, Simpson discloses wherein a tapered transition section is disposed between the upper section and the lower section of an apparatus for separating particulates from a carrier fluid (see Simpson, Fig. 2 and Fig. 5).

24. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parker (US 4692311) in view of Fandel (US 5843377). Alternatively, claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parker (US 4692311) in view of Simpson (US 7108138) and Fandel (US 5843377).

25. With respect to claim 4, Parker discloses a particulate stripping unit (Fig. 2) for separating particles in suspension with a carrier fluid with a self-stripping disengagement feature, comprising: (a) a vessel (17) having a cyclone section (24) and a stripping section (27); (b) an inlet (31) to tangentially feed a particulate-fluid suspension to the cyclone section (24); (c) a cylindrical surface within the cyclone section (24) to separate a major fraction of the particulates from the suspension and form a central fluid vortex of reduced particulate content; (d) a particulate discharge outlet (39) from the cyclone section (24) to the stripping section (27); (e) a plurality of apertures disposed through a lower portion of the stripping section (see Parker, Fig. 2; and column 6, lines 22-24); and (f) a discharge line (20) from the cyclone section (24) in communication with the vortex.

Parker does not disclose wherein the particulate stripping unit comprises (1) a stripping section having a cross sectional area less than a cross sectional area of the cyclone section; or (2) a thermal expansion joint disposed on the discharge line from the cyclone section.

However, it is known to those in the art that changes in diameter of a conduit through which fluid flows will induce a vortex to form therein. For example, Simpson discloses a material classifier device which uses an internal cyclone to separate coarse particles from fine particles (see Simpson, Abstract). Simpson instructs that “in order to enhance and aid the interior vortex development, one needs to introduce diffuser air at a cylinder diameter larger than the cyclone outlet diameter” (see Simpson, column 6, lines 12-24). Examiner further notes that Simpson discloses wherein his cyclone

material classifier uses "a plurality of openings disposed through a lower portion of the stripping section" (see Simpson, column 6, lines 12-24) which he again cites as important to aid in the formation and sustainability of the interior vortex. In addition, Fandel discloses an FCC separation system that uses a gas collection conduit that incorporates an expansion element for accommodating differential growth between different subunits of the FCC separation system (see Fandel, Abstract). Fandel explains that the expansion elements (e.g. thermal expansion joints) are provided to relieve stresses associated with differential expansions occurring as a result of changes in process temperature (e.g. during process start-up and shut-down). Thus, such expansion elements are provided as a means to eliminate rigid connections between subunits of the FCC system, and allow for positional changes of the process equipment in relation to changes in process temperature that would otherwise cause damage to the equipment as a result of thermal stress or fatigue failure (see Fandel, column 2, lines 11-19; column 3, lines 2-4 and 62-67; and column 4, lines 1-13).

Therefore, the person having ordinary skill in the art of particulate stripping units would have been motivated to (1) modify the unit of Parker by increasing the cross sectional area of the cyclone section relative to the stripping section (as is known in the art and further evidenced by Simpson) in order to ensure rapid development and sustained strength of an interior vortex necessary to separate particulates from the carrier fluid; and (2) incorporate the thermal expansion joints of Fandel into the particulate stripping unit of Parker in order to prevent equipment failure brought about by thermal expansion of the unit connections.

Finally, the person having ordinary skill in the art of particulate stripping units would have had a reasonable expectation of success in modifying the unit of Parker as taught by Simpson and Fandel because: (1) Parker, Simpson, and Fandel are all concerned with the cyclonic removal of particulate matter from a carrier fluid; and (2) Parker's unit is not specifically limited to the embodiment shown in his Fig. 2.

26. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker (US 4692311).

27. With respect to claims 30 and 32, Parker discloses a method for stripping particulates from a particulate-fluid suspension comprising (see Parker, column 1, lines 10-19): (a) introducing a particulate-fluid suspension to a vessel (17) comprising (i) an upper section (24) with a first cross-sectional area, (ii) a lower section (27, 35) with a second cross-sectional area, (iii) a conical member (25, 26) disposed within the lower section (27, 35) and mounted coaxially along a longitudinal centerline of the lower section (27, 35) thereby forming one or more passages therebetween, (iv) a tangential inlet (31) to feed a particulate-fluid suspension to the upper section (24) wherein at least a portion of the upper section (24) has a cylindrical surface to separate a major fraction of the particulates from the suspension and form a vortex of reduced particulate content, wherein the lower section (27, 35) comprises a lower surface having a plurality of apertures formed therethrough (see Parker, Fig. 2; and column 6, lines 18-26); (b) separating particulates from the particulate-fluid suspension using the cylindrical surface within the upper section (24) thereby forming a vortex of reduced particulate content; (c) settling the separated particulates into the lower section (27, 35); and (d) introducing a

fluid through the plurality of apertures in the lower surface of the lower section (27, 35) (see Parker, Fig. 2; and column 6, lines 1-26).

Parker does not disclose wherein the downward flow of particulates occurs at an average solids flux rate of from 24 to 440 kg per square meter of cross-sectional area per second, or wherein stripping fluid is introduced at an average fluid velocity of from 9 to 90 meters per second.

However, Parker discloses wherein the stripping fluid velocity will depend on catalyst circulation rate and cyclone (i.e. catalyst bed) cross sectional area (see Parker, column 6, lines 64-66). In addition, Parker provides the results from a pilot scale study in which he relates catalyst flow rate to stripping fluid rate (see Parker, Table 1) and provides comparison to commercial-scale operations (see Parker, column 6, lines 66-68; and column 7, lines 1-6). In this regard, the court has instructed that the mere scaling up of a prior art process capable of being scaled up does not establish patentability in a claim to an old process so scaled. *See In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976).

Therefore, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to scale the apparatus and process of Parker in order to provide an average solids flux rate of from 24 to 440 kg per square meter of cross-sectional area per second, and stripping fluid at an average fluid velocity of from 9 to 90 meters per second.

28. With respect to claim 31, Parker discloses wherein the method includes passing fluid up through the annular passage at a superficial velocity range of 0.1 to 5 meters per second (see Parker, column 6, lines 66-68).

Response to Arguments

29. Applicant's arguments filed 17 October 2007 have been fully considered but they are not persuasive.

30. Examiner understands Applicant's principal arguments to be:

I. Parker does not teach, show, or suggest a lower section comprising a lower surface having a plurality of apertures formed therethrough.

II. Parker does not teach, show, or suggest an upper section with a first cross-sectional area and a lower section with a second cross-sectional area.

III. Parker does not teach, show, or suggest a vessel having a cyclone and a stripping section where the stripping section has a cross sectional area less than a cross-sectional area of the cyclone section.

IV. Neither Simpson nor Dewitz discusses a stripping section having a cross-sectional area less than a cross-sectional area of a cyclone section.

V. Examiner's assertions that "it is known to those in the art that changes in diameter of a conduit through which fluid flows will induce a vortex to form therein" is a mere legal conclusion based on impermissible hindsight.

VI. A combination of Parker, Simpson, and Dewitz does not teach, show, or suggest a stripping section having a cross-sectional area less than a cross-sectional area of the existing cyclone.

VII. A combination of Parker, Simpson, and Dewitz does not teach, show, or suggest a plurality of apertures formed through a lower portion of the stripping zone.

31. With respect to Applicant's first argument, Examiner interprets "aperture" to mean "opening" in the broadest sense of the word. Thus, Examiner submits that it is clear from a complete reading of Parker and especially in reference to Fig. 2, that Parker indeed discloses a plurality of "apertures" disposed through a lower portion of the stripping section. Furthermore, Examiner submits that if such were not the case, then the entire device of Parker would be nonfunctional since there would be no way for the ammonia and air to enter the catalyst bed of Parker.

32. With respect to Applicant's second argument, Examiner notes that the argument is directed to claims 25, 28, 29, and 33 which were rejected under 35 U.S.C. 102(b). In this regard, Examiner submits that Parker discloses an upper section (24) with a first cross-sectional area and a lower section (27, 35) with a second cross-sectional area. Examiner notes that Applicant's claims do not include a limitation providing for a first cross-sectional area of the upper section that is larger than the second cross-sectional area of the lower section. Thus, Examiner submits that Parker meets Applicant's claim limitations for instances when the first cross-sectional area and second cross-sectional area are the same or equal.

33. With respect to Applicant's third argument, Examiner notes that the argument is directed to the rejections of claims 1, 5, 6, 21-24, 26, and 27 under 35 U.S.C. 103(a). In this regard, Examiner notes that these claims were rejected based on the *combined*

teachings of Parker, Simpson, Dewitz, and/or that which is otherwise commonly known in the art. Thus, Applicant's argument is unpersuasive and insufficient to overcome the obviousness rejections because one cannot show nonobviousness by attacking references *individually* where the rejections are based on *combinations* of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

34. With respect to Applicant's fourth argument, Examiner does not make the argument that Simpson discloses a stripping section having a cross-sectional area less than a cross-sectional area of a cyclone section. Rather, Examiner relies on Simpson as evidence of what is known in the art with respect to step changes in diameter inducing a vortex to form. In this regard, Applicant's argument is unpersuasive and insufficient to overcome the obviousness rejections because one cannot show nonobviousness by attacking references *individually* where the rejections are based on *combinations* of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

35. With respect to Applicant's fifth argument, see discussion *supra* at paragraph 16 and footnote 1.

36. With respect to Applicant's sixth argument, see discussion *supra* at paragraph 16. Examiner maintains that there is clear and sufficient motivation from Simpson and what is otherwise known to those of ordinary skill in the prior art for modifying the device of Parker to provide for a stripping section having a cross-sectional area less than a cross-sectional area of the existing cyclone.

37. With respect to Applicant's seventh argument, see discussion *supra* at paragraph 31.

Conclusion

38. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 10:00 A.M. to 7:00 P.M. (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

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RPB

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